No.



200300256

THE UNITED STATES OF ANTERIOS

TO AMETO WHOM THESE PRESENTS SHAME COME:

Monsanto Company

JULICIONS, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT, PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR NT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN D STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS, (84 STAT. D, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Douglas'

In Testimonn Murrers, I have hereunto set my hand and caused the seal of the Mant Darieto Frotection Office to be affixed at the City of Washington, D.C. this twenty-eighth day of January, in the year two thousand and four.

	Lα	al Reproduction of FORM - OMB NO. 0581-0		
U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE	The following statements are made in account 1974 (5 U.S.C. 552a)			
APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATION (Instructions and information collection burden statement on reverse)	Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421) Information is held confidential until certificate is issued (7 U.S.C. 2426).			
I. NAME OF APPLICANT(S) (as it is to appear on the Certificate)	2. TEMPORARY DESIGNATION OR	3. VARIETY NAME		
Monsanto Company	EXPERIMENTAL NUMBER M98*2152	Douglas		
ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code)	5. TELEPHONE (include area code)			
00 Chesterfield Parkway North	636-737-6089	20030025		
	6. FAX (include area code)	F DATE		
	636-737-7250	1 May 19,2003		
GENUS AND SPECIES NAME 8. FAMILY NAME	(Botonical)	FILING AND EXAMINATION FEE:		
Triticum aestivum Gramine	eae	₽ (D) 2705.00 E (E) 947.00		
CROP KIND NAMB (common name)		S DATE		
Soft Red Winter Wheat		R (1) 5/19/2003 B (2) 6/3/200>		
FIGURE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporate Corporation	ion, partnership, association,etc.) (common name)	E CERTIFICATION FEE V 4 432.00		
. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. DATE OF INCORPORATION	D DATE		
Delaware	1933	1/16/2004		
NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS AID. Solly Metz Chesterfield Parkway North AND	PPLICATION AND RECEIVE ALL PAPERS Dr. Rollin Sears 6515 Ascher Road	14. TELEPHONE (include area code) 636-737-6089		
t. Louis, Missouri 63198	Junction City, Kansas 66441	15. FAX (include area code)		
		636-737-7250		
CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (follow instructions on rev a. X Exhibit A. Origin and Breeding History of the Variety	verse)			
b. X Exhibit B. Statement of Distinctness				
c. X Exhibit C. Objective Description of the Variety				
d. X Exhibit D. Additional Description of the Variety				
e. X Exhibit E. Statement of the Basis of the Applicant's Ownership				
f. X Voucher Sample (2,500 viable untreated seeds, or, for tuber propagated varieties veificat	•	nublic repository)		
g. X Filing and Examination Fee (\$2,450), made payable to "Treasurer of the U DOBS THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NA	· · · · · · · · · · · · · · · · · · ·	Service DS(s) of the Direct Ventorin Description det		
X YES (if "yes", answer items 18 and 19 below)	NO (if 'no", go to item 20)	BERION UNIA) Of the Phillip Purioty Provention Acty		
DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBE	R OF 19. IF 'YES' TO ITEM 18, WHICH CLASSES (OF PRODUCTION BEYOND BREEDERS SEED		
GENERATIONS? YES X NO	FOUNDATION REGIST	BRBD CERTIFIED		
HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USB YES (iF "YES", give names of countries and dates)	D, OFFERED FOR SALE, OR MARKETED IN THE X NO	U.S. OR OTHER COUNTRIES?		
The applicant(s) declare that a viable sample of basic seed of the variety will be famished with the applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and m		e wha such regulations as may be		
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber plant variety, and be Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection	elieve(s) that the variety is new, distinct, uniform, and s	table as required in		
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalti	ies.			
NATURE OF APPLICANT (Owner(s))	SIGNATURE OF APPLICANT (Own	ier {s})		
ME (Please print or type) Sally Metz	NAME (Please print or type)			
	רא ס ארעוועג עס אוויין די	The A TIPD II.		
PACITY OR TITLE Director Wheat Technology	CAPACITY OR TITLE	DATE		

Exhibit A. Origin and Breeding History of Douglas

Douglas is a soft red winter wheat developed by Agripro Wheat located at Brookston IN. It was derived from a cross-made in the 1993 fall greenhouse (Pioneer2550/3/72-224//32and 92M*3449 Pioneer 2510 using 74/Ben5/4/803-4/103-77/Fred*2/BSK). The line '72-224 and '32-74 are breeding lines from the old NAPB program (dating back to the 1970's) for which we have no records. The 'Fred' line we believe to be "Fredrick' a Michigan soft red winter wheat. A bulk breeding method was used to develop Douglas. F1, F2, F3 and F4 populations were grown in Indiana. From the F4 bulk 150 heads were randomly selected for height and plant health and were planted as head rows. A single F5 head row was advanced to preliminary yield testing as an F6 in 1998. Douglas was advanced on the criteria dark green foliage color, disease resistance and excellent yield performance.

In 2000, 100 headrows were grown in Lafayette, IN and evaluated for phenotypic similarity. 78 were selected and bulk harvested. A 0.2 acre initial Breeders seed increase was grown in Colorado in 2001. A 4.0 acre Breeders seed increase was grown in Berthoud, Colorado in 2002. Foundation seed was planted in the Fall of 2002.

Douglas has been uniform and stable since 2001. Less than 0.8% of the plants were rogued from the Breeders seed increase in 2002. Approximately 10% of the rogued variant plants were taller height wheat plants (8 to 15 cm) and 80% were awnletted. Up to 1% variant plants may be encountered in subsequent generations.

Exhibit B. Statement of Distinctness

Douglas is most similar to the soft red winter wheat 'Elkhart'. However it can be distinguished by the following characteristics

- Douglas has a medium glume length and width (Berhoud, CO 2001, 2002). Elkhart has a short glume length and a narrow glume width (Berhoud, CO 2001, 2002).
- Douglas has long brush hairs on the seed and occupies a large area of the seed (Berhoud,CO 2001, 2002). Elkhart has a medium brush length on the seed and occupies a medium area of the seed (Berhoud,CO 2001, 2002).

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE SCIENCE DIVISION BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (Triticum Spp.)

NAME OF APPLICANT(S)		FOR OFFICIAL USE ONLY				
Monsanto Company		PVPO NU 28 0 0 0 0 2	56			
ADDRESS (Street and No. or R.F.D. No., City, State, a 700 Chesterfield Parkway North St. Louis, Missouri 63198	and Zip Code) 	NAME OR EXPERIMENTAL DESIGNATION Douglas				
Place the appropriate number that describes the varietal character of Place a zero in the first box when number is either 99 or less or 9 or minimum of 100 plants. Comparative data should be determined first standard may be used to determine plant colors; designate system us Please answer all questions for your variety; lack of response may determine the plant colors.	r less respectively. Data for quantitative p from varieties entered in the same trial. R sed.		·			
1. KIND:						
1 l=Common 2=Durum 3=Club	4=Other (specify)					
2. VERNALIZATION:						
2 1=Spring 2=Winter 3=Other (spec	ecify)					
3. COLEOPTILE ANTHOCYANIN:			•			
1 1=Absent 2=Present						
4. JUVENILE PLANT GROWTH:						
2 1=Prostrate 2=Semi-erect 3=Erect	t ·					
5. PLANT COLOR (boot stage):						
$1 = Yellow-Green \qquad 2 = Green \qquad 3 = 1$	Blue-Green					
6. FLAG LEAF (boot stage):						
1 = Erect 2 = Recurved			*			
2 1 = Not Twisted 2 = Twisted						
7. EAR EMERGENCE:						
0 0 Number of Days Earlier Than		*				
0 4 Number of Days Later Than	Patton	*				
8. ANTHER COLOR:						
1 = YELLOW 2 = PURPLE	a in					
9. PLANT HEIGHT (from soil to top of head, excludin	ığ awns):					
0 0 cm Taller Than		*				
0 2 cm Shorter Than	Patton	*				

^{*} Relative to a PVPO-Apprved Commercial Variety Grown in the Same Trial

Exhibit C (Wheat) Page 2 Douglas	
10. STEM: A. ANTHOCYANIN	200300256
1 1= Absent 2=Present	
B. WAXY BLOOM	
2 1=Absent 2=Present	
C. HAIRINESS (last internode of rachis)	
2 l=Absent 2=Present	
D. INTERNODE (specify number)	
1 1=Hollow 2=Semi-solid 3=Solid	
E. PEDUNCLE	
1 1=Erect 2=Recurved	
0 4 cm Length	
11. HEAD (at Maturity): A. DENSITY	•
2 1=Lax 2=Middense 3= Dense	
B. SHAPE	
1 = Tapering 2= Strap 3 = Clavate	4 = Other (specify)
C. CURVATURE	
2 1 = Erect 2 = Inclined 3 = Recurved	
D. AWNEDNESS	
	= Awnletted 4 = Awned
12. GLUMES (at Maturity): A. COLOR	
1 = White $2 = \text{Tan}$ $3 = \text{Other } (specify)$	
B. SHOULDER	
2 1 = Wanting 2 = Oblique 3 = Rounded	4 = Square $5 = $ Elevated $6 = $ Apiculate
C. BEAK	
3 1 = Obtuse 2 = Acute 3 = Acuminate	
D. LENGTH	
1 = Short (ca. 7mm) 2 = Medium (ca. 8mm)	3 = Long (ca. 9mm)
E. WIDTH	
2 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm)	3 = Wide (ca. 4mm)
13. SEED: A. SHAPE	
1	
B. CHEEK	
1 1=Rounded 2=Angular	
C. BRUSH	
3 1=Short 2=Medium 3=Long	
1 = Not Collared 2 = Collared	
D. CREASE	
1 = Width 60% or less of Kernel	1 = Depth 20% or less of Kernel
2 = Width 80% or less of Kernel 3 = Width Nearly as Wide as Kernel	2 = Depth 35% or less of Kernel 3 = Depth 50% or less of Kernel

Exhib	bit C (Wheat) Page 4 Douglas			29
	INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=SE SPECIFY BIOTYPE (where needed)	Intermediate; 4=Tolerant)		
0	Hessian Fly (Mayetiola destructor)	Other (specify)		
0	Stem Sawfly (Cephus spp.)	Other (specify)	dia.	
0	Cereal Leaf Beetle (Oulema melanopa)	Other (specify)		
0	Russian Aphid (Diuraphis noxia)	Other (specify)	<u>.</u>	
0	Greenbug (Schizaphis graminum)	Other (specify)		
0	Aphids			
16. A	ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENER None	AL COMMENTS:		
. —		·		

Exhibit D. Additional Description of Douglas

Douglas is a soft red winter wheat bred and developed by AgriPro Wheat. Douglas is a soft red winter wheat with late maturity, and medium tall plant height. Douglas provides intermediate protection to Tan spot, is moderately resistant to Leaf rust and Soilborne mosaic virus and is susceptible to Scab.

Juvenile growth habit is semierect. Plant color at boot stage is green. Flag leaf at boot stage is erect and twisted. Waxy bloom is present on the head, stem and flag leaf sheath. Anther color is yellow. Head shape is tapering and awned. Glumes are glabrous, midwide in width and midlong in length with oblique shoulders and acuminate beaks. Seed shape is ovate. Brush hairs are long in length and occupy a large area of the seed tip. Seed crease depth is shallow and width is narrow. Seed cheeks are rounded.

Douglas is primarily adapted to Missouri, Kentucky, Illinois, Indiana, Ohio, Wisconsin, Michigan and Ontario.

AgriPro Wheat

SOFT WHEAT QUALITY SUMMARY

			Mill	ing Quality	y	Bak	ing Qualit	y	
Year	LabNo	Loc-Code	Brk Flr %	%	Wht Prot 14%mb 198*2152	Flr Prot 14%mb	C.Diam	T.G R	Norris Hard
2001	4787	FO-91222	41.5			10.0	10.0	4	34
			41.5	73.0	11.5	10.0	18.0		
2001	4724	HN-91222	38.6	70.6	10.0	8.7	18.0	4	31
2000	7354	HN-91331	44.9	68.4	9.1	7.6	18.4	4	9
2000	7284	LF-91331	43.8	69.8	10.8	9.1	19.2	5	15
1999	7140	CI-81805	41.9	66.5	8.5	7.4	19.0	3	13
1999	7069	LF-81805	41.9	66.3	9.5	8.0	19.0	4	15
		Average	42.1	69.1	9.9	8.5	18.6	4	20
•		:		CA	LDWELI	L			
2001	4779	FO-91229	43.6	72.5	11.9	10.2	18.4	5	26
2001	4716	HN-91229	41.4	71.2	9.8	8.3	19.2	3	27
2000	7346	HN-91301	48.2	69.9	9.3	7.6	20.0	2	6
2000	7276	LF-91301	42.7	68.3	11.5	9.6	19.3	4	11
1999	7139	CI-81801	42.7	69.0	9.2	7.9	18.8	4	14
1999	7068	LF-81801	41.5	66.9	10.9	9.3	18.9	4	17
		Average	43.4	69.6	10.4	8.8	19.1	4	17
		:							,

Ratings: 1-2=Excellent 9-8=Unacceptable

Advanced yield testing has been conducted for the past 4 years in Agripro trials in Missouri, Arkansas, Illinois, Indiana, Ohio, and Maryland. M98*2152 was tested in Ontario and the Uniform Eastern Soft Red Winter wheat nursery in the 01-02 season. M98*2152 is primarily adapted to Missouri, Kentucky, Illinois, Indiana, Ohio, Wisconsin, Michigan and Ontario

Yield data:

M98*2152 Bu/A	2002 73		2001 67	. *	2000 68
% of mean	110%		106%		113%
Reps	2		2		2
# Locs	11		9		9
ChecksHopewell	63	Patterson	62	Patterson	59
Patton	64	Patton	66	Patton	62
Pio 25R37	71	Pio 2540	64	Pio 2540	64
Roane	67	Roane	63	Caldwell	52

2002 Test locations: Findlay OH, Brookston IN, Ansonia OH, Marion OH, Pana III, Sullivan IN, St. Jacobs IL, Haubstadt IN, Carmi IL, Sikeston MO, Jonesboro AR, Columbia MO

2001 Test locations: Findlay OH, Marion OH, Woodburn IN, Ansonia OH, Pana IL, St. Jacobs, IL, Haubstadt IN, Carmi IL, Sikeston MO, and Bowling Green KY.

2000 Test location: Woodburn IN, Findlay OH, Ansonia OH, Lafayette IN, Pana IL, St. Jacobs IL, Sullivan IN, Haubstadt IN, Jonesboro AR and Columbia MO.

2002 Uniform Eastern Yield and Test Weight Data:

		TW
Yield as % of trial mean		#/Bu
Reps	2 - 4	2-4
# Locs	12	12
M98*2152	118%	58.1
Checks Roane	104%	61.5
Patton	104%	59.4
Foster	100%	59.0
Caldwell	89%	58.8

2002 Uniform Eastern test locations: Ridgetown Ont, Nairn Ont, Ithaca NY, Lansing MI, Climax MI, Wooster OH, Urbana IL, Greensburg IN, Wabash IN, West Lafayette IN, Brownstown IL, Logan County, KY.

2002 Disease Notes {1-9 scale with 1 best}

Tan SpotSept NodorumSept triticiScabBYDVSBMVLeaf RustPowdery Mildew

M98*2152	4	1	1	8		3	2	2
Patton	4	6	4	5	6	5		5
Caldwell	6	7	5			3	5	5

Tan spot:

Brookston IN, St. Jacobs IL,

Septoria Nodorum:

Findlay OH, Carmi IL, St. Jacobs IL

Septoria Tritici:

Carmi IL, Haubstadt IN, St. Jacobs IL

Scab: BYDV:

Findlay OH

SBMV:

Carmi IL

Leaf Rust:

Sullivan IN, Urbana IL Keedysville MD, Wye MD, Columbia MO

Powdery Mildew

Findlay OH, Marion OH, Keedysvill MD, Wye MD

2001 Disease Notes {1-9 scale with 1 best}

Tan SpotSept NodorumSept triticiScabBYDVSBMVLeaf RustPowdery Mildew

M98*2152	4	5	3	1		1
Patton	4			.2	3	3
Caldwell						

Tan spot:

Ansonia, OH Carmi IL, St. Jacobs IL, Woodburn IN

Septoria Nodorum:

Carmi IL

SBMV:

Sullivan IN

Leaf Rust:

Haubstadt IN

Powdery Mildew

Lafayette IN

M98*2152 is a soft red winter wheat with late maturity, and medium tall plant height.

	2002	2001	2000
Height			
M98*2152	40 in	38 in	39 in
Patton	40 in	39 in	37 in
Caldwell	42 in	41 in	
Heading	Julian days		
M98*2152	144	136	125
Patton	136	130	120
Caldwell	142	134	122
Test Weight	#/Bu.		
M98*2152	61	61	52
Patton	61	60	54
Caldwell	59	61	54

M98*2152 Bu/A	2002 73		2001 67		2000 68
% of mean	110%		106%		113%
Reps	2		2		2
# Locs	11		9		9
ChecksHopewell	63	Patterson	62	Patterson	59
Patton	64	Patton	66	Patton	62
Pio 25R37	7 71	Pio 2540	64	Pio 2540	64
Roane	67	Roane	63	Caldwell	52

2002 Test locations: Findlay OH, Brookston IN, Ansonia OH, Marion OH, Pana Ill, Sullivan IN, St. Jacobs IL, Haubstadt IN, Carmi IL, Sikeston MO, Jonesboro AR, Columbia MO

2001 Test locations: Findlay OH, Marion OH, Woodburn IN, Ansonia OH, Pana IL, St. Jacobs, IL, Haubstadt IN, Carmi IL, Sikeston MO, and Bowling Green KY.

2000 Test location: Woodburn IN, Findlay OH, Ansonia OH, Lafayette IN, Pana IL, St. Jacobs IL, Sullivan IN, Haubstadt IN, Jonesboro AR and Columbia MO.

2002 Uniform Eastern Yield and Test Weight Data:

		TW
Yield as % of trial mean		#/Bu
Reps	2-4	2-4
# Locs	12	12
M98*2152	118%	58.1
ChecksRoane	104%	61.5
Patton	104%	59.4
Foster	100%	59.0
Caldwell	89%	58.8

2002 Uniform Eastern test locations: Ridgetown Ont, Nairn Ont, Ithaca NY, Lansing MI, Climax MI, Wooster OH, Urbana IL, Greensburg IN, Wabash IN, West Lafayette IN, Brownstown IL, Logan County, KY.

Exhibit E. Statement of the Basis of Applicant's Ownership

The variety for which Plant Variety Protection is hereby sought was developed by Curtis Beazer, an employee of AgriPro Wheat. By agreement between employees and AgriPro Wheat all rights to any invention, discovery, or development made by the employee while employed by AgriPro Wheat, were assigned to AgriPro Wheat, with no rights of any kind pertaining to 'Douglas' being retained by the employees.

By contractual agreement the variety 'Douglas' was purchased from AgriPro Wheat, a business unit of Advanta USA, Inc. in June of 1996 and is currently owned by Monsanto Company.